WHAT IS CLAIMED IS:

1. A computer implemented method of controlling a physical system responsive to a drive to produce a selected output, the method comprising:

defining a virtual identity system which includes the physical system for receiving the drive to provide an actual output;

checking a quality of identity of the virtual identity system using at least a function of the actual output; and

controlling the physical system as a function of checking the quality of identity of the virtual identity system.

2. The computer implemented method of claim 1 wherein the virtual identity system includes at least one of an inverse model of the physical system and a forward model of the physical system.

3. The computer implemented method of claim 2 wherein said at least one of the inverse model of the physical system and the forward model of the physical system includes an adjustable component and a static component.

4. The computer implemented method of claim 3 and further comprising:

adjusting the adjustable component as a function of the quality of identity.

5. The computer implemented method of claim 4 wherein checking the quality of identity is successively repeated until a desired actual signal

power spectral density is obtained after iteration through application of corresponding successive drives, and wherein each the actual signal power spectral density outputs is obtained as a function of corresponding drive power spectral density.

6. The computer implemented method of claim 2 and further comprising:

adjusting said at least one of the inverse model of the physical system and the forward model of the physical system as a function of the quality of identity.

7. The computer implemented method of claim 6 wherein controlling the physical system includes generating a drive as a function of the inverse model of the physical system.

8. The computer implemented method of claim 7 and further comprising adjusting the drive for non-linearities as a function of the quality of identity.

9. The computer implemented method of claim 7 wherein said at least one of the inverse model of the physical system and the forward model of the physical system includes an adjustable component and a static component.

10. The computer implemented method of claim 9 wherein the drive is obtained as a function of a plurality of adjustable components applied over differing time regions to obtain a desired response.

11. The computer implemented method of claim 10 wherein the same static component is used with each of the plurality of adjustable components.

12. The computer implemented method of claim 9 wherein the drive is obtained as a function of a sequence of overlapping adjustable components applied over sequential, overlapping time regions to obtain a desired response.

13. The computer implemented method of claim 12 wherein the one static component is used to generate the drive.

14. The computer implemented method of claim 9 wherein checking the quality of identity and generating a drive are successively repeated until a desired actual output is obtained, each new drive providing a corresponding actual output that is used in a successive iteration of checking the quality of identity.

15. The computer implemented method of claim 14 wherein the quality of identity is a function of comparing the actual output and a target output.

16. The computer implemented method of claim 14 wherein checking the quality of identity is a function of comparing a difference between successive actual outputs with a difference between successive target outputs.

17. The computer implemented method of claim 14 wherein the virtual identity includes the forward model of the physical system, and wherein checking the quality of identity includes providing the drive to the forward model of the physical system to obtain a modeled output and comparing a first signal being a function of the modeled output with a second signal being a function of the actual output, and wherein the method further comprises adjusting the adjustable component as a function of comparing the first signal and the second signal.

18. The computer implemented method of claim 17 wherein the first signal comprises a difference between successive modeled outputs and the second signal comprises a difference between successive actual outputs.

19. The computer implemented method of claim 14 wherein the virtual identity includes the inverse model of the physical system, and wherein checking the quality of identity includes providing the actual output to the inverse model of the physical system to obtain a modeled drive and comparing a first signal being a function of the modeled drive with a second signal being a function of the drive corresponding to the actual output, and wherein the method further comprises adjusting the adjustable component as a function of comparing the first signal and the second signal.

20. The computer implemented method of claim 19 wherein the first signal comprises a difference

between successive modeled drives and the second signal comprises a difference between successive drives of corresponding successive actual outputs.

21. The computer implemented method of claim 1 wherein the virtual identity system includes a forward model comprising a static component being a forward model of the physical system, a first adjustable component and a second adjustable component, and wherein a second virtual identity system comprises an inverse model of the physical system comprising a static component being an inverse model of the physical system, a third adjustable component being an inverse of the first adjustable component, and a fourth adjustable component being an inverse of the second adjustable component, and wherein checking the quality of identity includes: providing the drive to the forward model to obtain a modeled output and comparing a first signal being a function of the modeled output with a second signal being a function of the actual output; and providing the actual output to the inverse model to obtain a modeled drive and comparing a third signal being a function of the modeled drive with a fourth signal being a function of the drive corresponding to the actual output; and wherein the method further comprises adjusting the second adjustable component as a function of comparing the first signal and the second signal and adjusting the third adjustable component as a function of comparing the third signal and the fourth signal, and wherein controlling the physical system comprises controlling the physical system as a function of checking the quality of identity of the first-

mentioned virtual identity system and the second virtual identity system.

22. The computer implemented method of claim 9 wherein checking the quality of identity and generating a drive are successively repeated until a desired actual signal power spectral density is obtained, and wherein the drive comprises a signal in the time domain.

23. The computer implemented method of claim 2 wherein the virtual identity system comprises a static component of said at least one of an inverse model of the physical system and a forward model of the physical system, and wherein controlling the physical system includes non-iteratively generating a drive as a function of the static component of said at least one of an inverse model of the physical system and a forward model of the physical system, an adjustable component and a desired output, and wherein the method further comprises continuously adjusting the adjustable component as a function of a quality of identity on a real-time basis.

24. A computer readable medium including instructions readable by a computer, which when implemented, cause the computer to control a physical system responsive to a drive to produce a selected output, the instructions performing steps comprising:

checking a quality of identity of the virtual identity system using at least a function of the actual output; and

controlling the physical system as a function of checking the quality of identity of the virtual identity system.

25. The computer readable medium of claim 24 wherein the virtual identity system includes at least one of an inverse model of the physical system and a forward model of the physical system.

26. The computer readable medium of claim 25 wherein said at least one of the inverse model of the physical system and the forward model of the physical system includes an adjustable component and a static component.

27. The computer readable medium of claim 26 and further instructions for performing a step comprising:

adjusting the adjustable component as a function of the quality of identity.

28. The computer readable medium of claim 27 wherein checking the quality of identity is successively repeated until a desired actual signal power spectral density is obtained after iteration through application of corresponding successive drives, and wherein each the actual signal power spectral density outputs is obtained as a function of corresponding drive power spectral density.

29. The computer readable medium of claim 25 and further comprising instructions for performing a step comprising:

adjusting said at least one of the inverse model of the physical system and the forward model of the physical system as a function of the quality of identity.

30. The computer readable medium of claim 29 wherein controlling the physical system includes generating a drive as a function of the inverse model of the physical system.

31. The computer readable medium of claim 30 and further comprising adjusting the drive for non-linearities as a function of the quality of identity.

32. The computer readable medium of claim 30 wherein said at least one of the inverse model of the physical system and the forward model of the physical system includes an adjustable component and a static component.

33. The computer readable medium of claim 32 wherein the drive is obtained as a function of a plurality of adjustable components applied over differing time regions to obtain a desired response.

34. The computer readable medium of claim 33 wherein the same static component is used with each of the plurality of adjustable components.

35. The computer readable medium of claim 32 wherein the drive is obtained as a function of a sequence of overlapping adjustable components applied over

sequential, overlapping time regions to obtain a desired response.

36. The computer readable medium of claim 35 wherein the one static component is used to generate the drive.

37. The computer readable medium of claim 32 wherein checking the quality of identity and generating a drive are successively repeated until a desired actual output is obtained, each new drive providing a corresponding actual output that is used in a successive iteration of checking the quality of identity.

38. The computer readable medium of claim 37 wherein the quality of identity is a function of comparing the actual output and a target output.

39. The computer readable medium of claim 37 wherein checking the quality of identity is a function of comparing a difference between successive actual outputs with a difference between successive target outputs.

40. The computer readable medium of claim 37 wherein the virtual identity includes the forward model of the physical system, and wherein checking the quality of identity includes providing the drive to the forward model of the physical system to obtain a modeled output and comparing a first signal being a function of the modeled output with a second signal being a function of the actual output, and wherein the

instructions further comprise adjusting the adjustable component as a function of comparing the first signal and the second signal.

41. The computer readable medium of claim 40 wherein the first signal comprises a difference between successive modeled outputs and the second signal comprises a difference between successive actual outputs.

42. The computer readable medium of claim 37 wherein the virtual identity includes the inverse model of the physical system, and wherein checking the quality of identity includes providing the actual output to the inverse model of the physical system to obtain a modeled drive and comparing a first signal being a function of the modeled drive with a second signal being a function of the drive corresponding to the actual output, and wherein the instructions further comprise adjusting the adjustable component as a function of comparing the first signal and the second signal.

43. The computer readable medium of claim 42 wherein the first signal comprises a difference between successive modeled drives and the second signal comprises a difference between successive drives of corresponding successive actual outputs.

44. The computer readable medium of claim 24 wherein the virtual identity system includes a forward model comprising a static component being a forward model of the physical system, a first adjustable component and

a second adjustable component, and wherein a second virtual identity system comprises an inverse model of the physical system comprising a static component being an inverse model of the physical system, a third adjustable component being an inverse of the first adjustable component, and a fourth adjustable component being an inverse of the second adjustable component, and wherein checking the quality of identity includes: providing the drive to the forward model to obtain a modeled output and comparing a first signal being a function of the modeled output with a second signal being a function of the actual output; and providing the actual output to the inverse model to obtain a modeled drive and comparing a third signal being a function of the modeled drive with a fourth signal being a function of the drive corresponding to the actual output; and wherein the instructions further comprise adjusting the second adjustable component as a function of comparing the first signal and the second signal and adjusting the third adjustable component as a function of comparing the third signal and the fourth signal, and wherein controlling the physical system comprises controlling the physical system as a function of checking the quality of identity of the first-mentioned virtual identity system and the second virtual identity system.

45. The computer readable medium of claim 32 wherein checking the quality of identity and generating a drive are successively repeated until a desired actual signal power spectral density is obtained, and wherein the drive comprises a signal in the time domain.

46. The computer readable medium of claim 25 wherein the virtual identity system comprises a static component of said at least one of an inverse model of the physical system and a forward model of the physical system, and wherein controlling the physical system includes non-iteratively generating a drive as a function of the static component of said at least one of an inverse model of the physical system and a forward model of the physical system, an adjustable component and a desired output, and wherein the instructions further comprise continuously adjusting the adjustable component as a function of a quality of identity on a real-time basis.

47. A system controller for controlling a physical system responsive to a drive to produce a selected output, the system controller comprising:

means for defining a virtual identity system which includes the physical system for receiving the drive to provide an actual output; and

means for checking a quality of identity of the virtual identity system using at least a function of the actual output.

48. The system controller of claim 47 wherein the virtual identity system includes at least one of an inverse model of the physical system and a forward model of the physical system.

49. The system controller of claim 48 wherein said at least one of the inverse model of the physical system

and the forward model of the physical system includes an adjustable component and a static component.

50. The system controller of claim 49 and further comprising:

means for adjusting the adjustable component as a function of the quality of identity.

51. The system controller of claim 48 and further comprising:

means for adjusting said at least one of the inverse model of the physical system and the forward model of the physical system as a function of the quality of identity.